THE

VETERINARY JOURNAL

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Editorials

THE NATIONAL VETERINARY ASSOCIATION

THE programme prepared by the energetic workers of the National Veterinary Association Committee for the meeting at York should attract all comers, and it only remains for the members of the profession to attend and give it their support in order to ensure and complete the success. The chief unfortunate circumstance which had not been foreseen is that the dates clash with those of the Dublin Horse Show, and this will not only prevent sundry popular Irish members from crossing the Irish Sea, but will also account for the non-appearance of a number of English sporting members whose attendance at the greatest and best managed horse show in the world has become an annual event for which every other thing, professional or commercial, has to be set aside. This year each event has altered its usual time of assembly, and, unfortunately, they have unwittingly clashed. It is a point which the Committee of the National must take into consideration for the next, and future, years.

Now that the Association is at last on its feet again, and, indeed,

going ahead, it behoves us, one and all, to give it our best and most earnest support. If only we really do act up to the motto of our profession (*Vis Unita Fortior*) its future success is assured. No one can estimate the amount of hard work it has taken to get it into running order, and the time and energy given to it by the late Secretary, Mr. Basil Buxton, whose successor, Mr. G. Livesey, has already given much practical evidence of his desire to complete the work of organising the whole profession and pulling it into line in more ways than one with all the other learned and useful professions.

VETERINARY RESEARCH

THE year 1923 will indeed be a memorable one for the veterinary profession, as at last it has become recognised in a practical manner that research in animal diseases is a necessity for the good of the community. To have had some £30,000 set aside for the establishment of a Chair of Comparative Pathology at Cambridge was almost too good a thing to be believable, and the foundation in Scotland of the Animal Research Association had been quite an innovation; but to have a third substantial sum (£25,000) earmarked by the Government for the purpose of adding new and modern laboratories to the Camden Town School seems a piece of good fortune which is scarcely believable. At last the veterinary profession in Great Britain is getting recognised as it should be, and it now remains for these three great Institutions to demonstrate by their good results the value of the confidence which is being placed in them, and to make opportunities for our younger men to do research work here on equal footing with the young men in the veterinary worlds of other civilised countries.

THE BENEFICIAL EFFECT OF THE EIGHT-HOUR DAY ON THE OCCURRENCE OF COLIC AND TORSION OF THE BOWELS IN THE HORSE

LITTLE did those who instituted the number of hours a man may work think that indirectly they would benefit animals, and it may, to the uninitiated, appear a long way to stretch the imagination to find a connection between the Eight Hours' Labour Bill and colic of horses; there is, however, a very close and real connection which every practitioner who includes a large number of hard-working horses under his charge can verify. Colic, once so common an ailment amongst the animals of a hard-worked stud, is now a com-

paratively rare ailment, and although this may to some extent be due to improved stable management and hygiene, there is no doubt the eight-hour day for the driver has done away to a great extent with the long, exhausting days which used to be the lot of so many horses. Over and over again has the observation been made that cases of torsion of the bowel occurred most frequently in the fatigued and tired horse, whose intestinal tract was absolutely unfitted and unable to deal with the meal which it would hungrily devour; and the heavy draught horse was particularly a victim. It is true that we haven't so many horses to deal with as in the pre-motor days, but even taking that and the improved intelligence of the driver and horsekeeper into consideration, it can still reasonably be admitted that the enforced lessened hours of labour for man have beneficially made themselves felt in lessening the chances of overfatigue, and its consonant diseases, in the domesticated animals used for work.

General Articles

THE "BULL-DOG" CALF OF THE DEXTER BREED OF CATTLE

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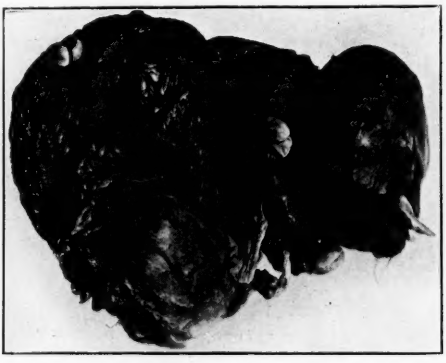
SCATTERED through the veterinary literature are references to the monstrous calf of the Dexter, and in reading these one can visualise the astonishment that overwhelms the practitioner on first meeting so strange a creature.

The Dexter is becoming increasingly popular in England, for its merits are many. But it has the one disadvantage that characterises the small breeds—a proportion of the calves are born dead and deformed. In the great majority of cases it can be foretold that the pregnancy is to end in the premature birth of a monstrous calf because in the third, fourth or fifth month the cow exhibits a severe degree of hydramnios; and then it is noticed that she is losing "water" from the vulva and rapidly decreasing in size. Soon, however, she is as big as ever, and again the embryonic membranes are ruptured. The process may be repeated for the third time, and following one of these cycles the fœtus is aborted. Exceptionally the hydramnios is not noticed, and the first indication of anything wrong is the onset, somewhat premature, of a prolonged and unavailing labour. The dystocia is due to the unusual shape and size of the fœtus, which cannot be accommodated by the maternal

birth passages, and the calf must be removed by operative measures. Whether the fœtus is aborted at the fourth, sixth or seventh month is decided by the degree of the associated hydramnios, but the calf invariably presents certain constant abnormalities, which have earned for it the characteristic name of a "bull-dog" calf, and which in combination constitute the condition of achondroplasia as met with in the case of the human subject. The cranium is bulging, the nose depressed, the lower jaw protruding, and the tongue curled up over the nose. Owing to the disproportionate development of the buttocks, the tail seems to take origin far up on the back, while usually there is a gaping deficiency of the abdominal wall through which the intestines pass to form a large umbilical hernia. Most striking feature of all is the very pronounced shortening of the limbs.

The examination of some forty cases, placed at my disposal by



the courtesy of members of the veterinary profession and of the breeders, has led me to the following conclusions. The condition is that of achondroplasia; the name is used as a group name, for in the case of the human achondroplasia is a term which includes many clinical entities. The condition is "hereditary," and is one of an arrest of bone formation in cartilage. The sex of the monstrous calf may be either male or female; its coat-colour black or red. Anasarca, hydramnios, hydrocephalus, micromelia and "main en bident" are usually exhibited in combination in some degree. The shape of the skull is characteristic, and results from the abnormal shortening of the base. The foramen magnum is markedly constricted, while the bones of the base are fused into one solid mass; the vomer is very robust, and there is no hard palate, while the nasals and the maxillæ are markedly foreshortened. The shafts

of the long bones of the limbs, especially of the proximal elements, are profoundly shortened. There is an arrest of growth, and the lesion is limited to those lines where bone is replacing cartilage; it is located in the epiphysial lines, where the cartilage cells adjoining the line of ossification lie passive. Endochondral ossification occurs, but the absorption of bone trabeculæ is defective, so that reconstruction of the cancellous tissue fails. The trabeculæ are excessively thick, with comparatively small areolæ between them.

Modern opinion is inclined to regard the stimulus which brings about these pre-ossification changes in normal bone formation as being endocrinal in nature, and to expect that the cause of achondroplasia will be shown to be a malfunctioning of the pituitary, the thyroid, the adrenals, or the sex-glands. The pituitaries of the monstrous calves examined have all presented a normal structure, but in all cases the gland has been unusually small and

much compressed. Advantage was taken of the melanophore response test devised by Hogben and Winton in order to detect the functioning of the posterior lobe of the pituitary of the monstrous calf. An injection of a minute quantity of active posterior lobe extract into a frog causes a very characteristic darkening of the skin in consequence of the complete expansion of the melanophores. Judged by the results of this test, the pituitary of a normal calf is functioning at least at the beginning of the third month of intra-uterine life, whereas the pituitary of the monstrous calf of as late as six months gives a very doubtful reaction. If it is reasonable to accept this test of the functional activity of the posterior lobe as a test for the functioning of the complete gland, then it would appear that the pituitary of the "bull-dog" calf is physiologically inactive during that period of fœtal life when normally bone-formation in

cartilage occurs, with the result that the development of the skeleton is pursued undirected by any control which the pituitary normally exerts upon this process. The thyroid was found to be abnormal in the cases previously examined by Seligmann, and this authority concluded that the condition was one of fœtal cretinism. On the other hand, Sheather found that the thyroid was normal, and inclined to the diagnosis of achondroplasia. In the large series of cases examined by the present writer the thyroid had varied very considerably, ranging from one indistinguishable from that of a normal calf in some of the earlier abortuses to one in which the gland has undergone transformation into fibrous tissue. The different states of the thyroid in the different cases suggest that there is a seriation of events somewhat of the following kind. In the earliest cases there is a normally developing thyroid; then this undergoes hyperplasia, which may be accepted as evidence of a condition of hyper-functioning, and in the oldest cases the gland is undergoing involution, fibrous atrophy, and progressive hyper-functioning. This is the typical course of events in cretinism, and would lead naturally to a diagnosis of cretinism; but the same seriation of events also follows removal of the anterior lobe of the pituitary in mammals, and taking this view the lesions of the thyroid can be regarded as secondary to a mal-functioning of the pituitary. To demonstrate in a spectacular way the fact that the thyroid of the fœtal "bull-dog" calf was functional, advantage was taken of the established fact that a single meal of fresh functional gland suffices to induce metamorphosis in the axolotl, the larval form of the Mexican salamander. This test is a specific one for thyroid activity, and when employed it demonstrated beyond all doubt that the thyroid gland of the "bull-dog" calf, in those cases in which it had not passed into the stage of complete involution, was functionally active.

In no case examined was the adrenal perfectly normal, and in most there were great areas of cartilage and of bone scattered throughout the gland. But since such areas of cartilage and bone are to be met with in other organs in which there is normally a considerable amount of fibrous tissue, it is probable that the conditions found in the adrenal are secondary to some other abnormality elsewhere. The tests and the ovaries were unexceptional.

The case of the monstrous calf of the Dexter suggests that the cause of achondroplasia is a delayed and imperfect functioning of the pituitary. The condition is one in which the abnormality is produced at about the second to the third months of fœtal life. A consideration of its incidence leads to the conclusion that so long

as the breeder insists on breeding towards the present standard of excellence so long will the monstrous calf appear. It is a significant fact that the Irish Dexter is Dexter by Kerry bred, and that such a mating has never yielded a "bull-dog" calf.

CONVERTING CATTLE INTO FLOUR

By E. MORGAN, F.R.C.V.S., D.V.H.,
Puerto Cabello, Venezuela, South America.

Food and drugs are now concentrated to such a degree so that bulk and weight has been reduced to its minimum, and when necessary before using such food or drug its strength can be reduced or its bulk increased by the addition of water. Drugs in the tablet or powdered form are nowadays used to an extent that even the dispensary of both medical and veterinary practitioner can be reduced to such a space that they can almost convey it all at the same time in their automobile, whilst attending their patients.

For instance, milk in a powdered form under the name of Klim, which word signifies milk when spelled backwards, is of great value to men travelling for weeks and months on end, on a horse or mule, in the wilds of a hot country like Venezuela, where one is obliged to reduce weight and bulk as low as possible, not only on account of travelling on land, but also swimming across wide rivers where bridges are often unknown; so food and drugs in a concentrated form are the admirable ones for a traveller or explorer.

The following extract from *The National Provisioner*, Chicago, dated March 3, 1923, might be of interest to some readers of the Veterinary Journal:—

"One solution to the problem of the tremendous surplus of beef in Australia and New Zealand has been offered, and initial efforts appear to have been along the right lines. Declining world markets for this cattle have resulted disastrously, and reports to the Department of Commerce tell of Australia's effort to convert surplus cattle into cash.

"Meat flour is being manufactured just as successfully as milk flour is being made in this country. By a special process of drying, a meat flour is produced that keeps indefinitely and contains all the body building and nutritive value of the fresh meat, and at a cost which permits easy retailing.

"The flour is really next to raw meat, for during the process the meat is not cooked, but dried at a very low temperature, and all that is actually lost is about 60 per cent. of water and the deterrent properties. During the drying the meat is squeezed, and all the fats,

blood and juices are expressed, which are then treated, all deterrent properties are destroyed, and after the final treatment the juices are placed back with the meat. The whole is then dried, and during the process the various gases allowed to escape.

"That which has been the cause of failures of many experiments for the past fifty years has been removed in this new Remus process. Owing to its fine form, meat flour can be cooked quicker than ordinary meat, and has an economical advantage in the saving of time and fuel.

"Australian meat-growers have acknowledged that South American competition has proven a body-blow to the island continent's frozen meat trade, and it is believed that they will be interested in establishing meat flour works and exporting this product to the Far East and other markets."

THE LIFE HISTORY OF THE WIREWORM OF SHEEP.

Introduction.—The wireworm of ruminants, scientifically known as *Hæmonchus contortus*, is a small thin worm which passes part of its life in the "fourth stomach," or "abomasum," of sheep, cattle, goats and other ruminants, including wild game, such as buck. Its distinguishing scientific name *contortus* is given to it on account of the contorted or spiral appearance of the internal organs of the female. In the adult form the white ovaries of the females are rolled round the reddish intestine to form regular loops, and this gives it a spiral striping like a barber's pole. It lives by sucking blood from the "mucous membrane" or lining of the stomach, and from this blood its intestines derive their colour.

Lambs and young sheep are most seriously affected, but although fully-grown sheep also suffer, they can sometimes harbour the worms for a long time without showing serious symptoms, provided the veld is in good condition and they obtain abundance of good food. Such *apparently healthy* adult sheep are a serious source of danger, since they keep the infection alive and, in their droppings, scatter eggs to infect the veld, and hence infect the rest of the flock.

There are six stages in the life history of the worm—the egg, four "larval" or immature stages, and the adult. Half of these stages is passed in the stomach of the sheep and the other half outside on the veld. The complete life-cycle may be indicated as follows :—

Adults.—Fully-grown males and females only live in the fourth stomach of sheep or other ruminants. Here they may thrive all the

year round, although the degree of infestation depends upon the season. Once a sheep is infected with wireworms it may remain infected for a very long time unless measures are taken to eradicate the parasite.

The female is somewhat larger than the male, and is readily distinguished by the enlargement over the hind third of its length, corresponding to the egg-laying organs. When full size has been reached the average length is about one inch and the average breadth about one-fiftieth of an inch. The females are then fertilised by the males and egg-laying begins.

Eggs.—The eggs then leave the stomach along with the food, pass through the intestines, and out with the droppings or " fæces." The eggs are oval in shape and very small ; only about one four-hundredth part of an inch in length. The number which can be passed out by a badly infected sheep is enormous, and even an infected sheep which is still *outwardly healthy* in appearance may pass as many as three million per day. The eggs then hatch out in the droppings on the veld, provided conditions of temperature and moisture are suitable. The warm, wet weather of summer is most favourable, and hence spread of wireworm infection is worst at this season. Hatching is very rapid and may begin at once, since development of the eggs occurs even in passing through the intestines. Under favourable conditions eggs may hatch 19 hours after being laid.

There are three non-parasitic stages, *i.e.*, the egg, the first larva, and the second larva, passed outside on the veld ; and three parasitic stages, *i.e.*, the third larva, fourth larva, and adult (male and female), passed in the stomach of the sheep. The time from entrance of the mature larva into the stomach until the first laying of eggs is about one month, and consideration of this period is, therefore, of the utmost importance in any system of dosing. If wireworm infection is to be eradicated with certainty, dosing must be repeated at least once a month in order to prevent females from developing to the stage at which they can lay eggs and so perpetuate the infection. If they do manage to lay eggs, these hatch out on the veld, develop, promptly re-infect the sheep, and restore the vicious cycle.

Influence of Season.—Since moisture and warmth are necessary for development of the eggs and early larval stages, veld infection is greatest during the warm, wet periods of the year. The infective larval stage may be reached in three days in warm weather, but only in three weeks in cold weather ; and not be reached at all in frosty weather. A reduced infection of the veld may, however, prevail all the year round, especially in vleis, since the mature larva in its " sheathed form," and with its capacity for " migrating " or wandering

along moist surfaces, will live for a long time. Exposure to direct sunlight and drought will kill it, but under such adverse conditions it returns to the soil to hide, only coming out again to crawl up the grass in dull, damp weather. If, of course, the worms never find a "host," *i.e.*, sheep or other ruminant, they finally die a natural death. The two practical points to remember are :—

(1) That an infected pasture may remain infected for at least a year, and that all sheep grazing on it during this time are liable to become infected.

(2) That a living sheep spreads the infection so long as adult wireworms are present in the stomach.

Eradication of the Worms.—In order to suppress the wireworm plague it is therefore necessary to kill the wireworms in the stomach of the sheep and to clear the farm of mature larvæ. The first task can be accomplished by using the wireworm remedy supplied by the Division of Veterinary Education and Research. The second is more difficult and takes longer to accomplish. One method would, of course, be to keep away all animals which act as hosts (sheep, goats, cattle, buck) for at least a year, and so leave the larvæ to die a natural death ; but this method is not feasible in ordinary farming. The other method is to allow the sheep to pick up the larvæ in grazing, but to kill them off in the stomach before they reach the egg-laying stage. Since the parasitic worm takes from three weeks to a month to reach sexual maturity, the treatment involves regular dosing at least once a month, especially during the rainy season. If this is done no eggs are laid, no fresh infection of the veld occurs, and the larvæ which are not picked up by the sheep die in time. The farm is then clean, and, provided no further infection is brought in from other areas, dosing is no longer necessary. Although the possibility exists that the infection may be kept alive by ruminants other than the sheep (cattle, buck), experience has shown that these animals are only rarely infected, and hence systematic dosing of sheep and goats is generally sufficient to eradicate the infection. In the rare cases in which infected buck, with which dosing is impossible, do keep the infection alive, periodic dosing of the sheep and goats may have to be continued indefinitely. It must be remembered that the wireworm remedy is a cure and not a preventive. It kills the worms in the stomach, but of course passes out of the stomach with the food, and hence cannot prevent re-infection. There is, therefore, no practical way of preventing reproduction of the worms except by killing them off regularly once a month until the source of infection on the veld itself disappears.

It may be added that the directions for use of the Government

remedy are arranged to eradicate worms as completely and quickly as possible, without danger of poisoning the sheep. They are, therefore, more drastic than most remedies upon the market, especially in regard to preliminary starvation treatment. Even if used under the less drastic conditions advertised for other remedies, however, the Government remedy is as effective as any of them.

Analogy with Tick Eradication.—The principle underlying these recommendations will, perhaps, be clearer if it is compared with the principle of eradication of ticks. Ticks cannot be prevented from attaching themselves to stock, and cannot be killed out in the grass by any feasible method. The stock, therefore, collect the ticks, but if the stock are regularly dipped the collected ticks are either destroyed or do not lay fertile eggs, and hence do not perpetuate the infestation. The ticks which do not attach themselves to stock die a natural death in course of time, and hence, after a year or two of regular dipping, the farm becomes clean. In the same way the sheep collect the wireworm larvæ, and the dosing destroys them. In the case of ticks, short intervals between dippings, three to fourteen days, according to the kind of tick, are necessary because the ticks breed very quickly after attacking. In the case of wireworms an interval of three or four weeks between dosings is sufficient to prevent breeding. If the dosing is systematically carried out the wireworms will be rapidly reduced to negligible numbers, just as ticks are reduced by dipping.

Diagnosis by Means of Culture.—A practical and easy method of finding out the extent to which sheep are infected with wireworms, even before they show the ill-effects of the infection, is to cultivate the eggs from the droppings and observe the migrating larvæ. Every farmer can do this for himself by simply collecting fresh moist droppings from the suspected sheep, placing them in a glass jam-jar, placing the jar in a comfortably warm cupboard, and watching events from day to day. Provided the droppings have been sufficiently moist, a fine dew deposits on the sides of the glass, and from the fourth day onwards the larvæ, which have developed from the eggs passed out by the sheep in the droppings, begin to migrate and form slimy white tracts ramifying over the surface of the glass. If the glass is now exposed to strong light the larvæ will be observed to return to the droppings, and enter them again provided they are still sufficiently wet. It should be added that "sour fæces" are unsuitable for culture, but that in most cases the experiment is successful, instructive and useful. —*Journal of the Department of Agriculture*, Union of South Africa, October, 1922.

Clinical Articles

RUPTURE OF THE PERICARDIUM IN A HORSE

By W. HUGHES, M.R.C.V.S.,
Caerwys, North Wales.

THE patient, a big 16 hands, six-year-old hunter, had been passed for soundness on the day previous to being sent by train close to the place where hounds met. It was ridden quietly to the meet and carried the owner, a lady, through a good day's hunt, which included a fifty-minute gallop without a check.

For about half an hour afterwards nothing was noticed, when symptoms of pain (diagnosed as colic) came on accompanied by apparent retching, in which gases were brought up, but no food. Suddenly the horse developed great distress and dropped dead.

Post-mortem revealed a ruptured pericardium, the heart itself being normal in appearance. The external muscular tissues appeared normal, but there was an unusual amount of fat on the omentum. The other organs appeared normal.

CHLOROFORM ANÆSTHESIA IN CATTLE

By G. G. HILL, M.R.C.V.S.,
Darlington.

ALTHOUGH occasional articles on the above subject have appeared from time to time in the columns of the VETERINARY JOURNAL, the use of chloroform as a general anæsthetic for cattle has not attained the prominence in veterinary practice which it deserves; and it is with a view to stimulating the use of this most useful adjunct to certain difficult conditions met with in cattle practice that I am sending this clinical note.

For the past eight years it has been in constant use in this practice, and on no account should I attempt a difficult parturition, or the return of an everted uterus, without first putting on the chloroform mask.

The way in which these cases are simplified is extraordinary, and, apart from the ground of humanity, the help to the operator needs only to be experienced once for it to be adopted as a routine measure. The method in eversion of the uterus is as follows: Remove the placenta and thoroughly wash the uterus with a weak antiseptic solution. When clean, place a sheet under the uterus, or, if the patient is standing, have it supported in a sheet with assistants holding the ends of the sheet on either side.

If the cow is down, fasten the hind legs together with a short rope and attach a pulley from a beam to the rope on the legs. A man should be told off to hold the end of the pulley rope, with instructions to pull if the cow attempts to rise, and in this way the patient is kept in the recumbent position.

The chloroform muzzle (Cox's pattern) is now put on, about ℥i. of chloroform poured on to the wool, and the head wrapped up in a rug.

When the patient is well under, the hind quarters are raised by means of the pulley, the assistants holding the ends of the sheet raise the uterus at the same time.

With the uterus held in this position, press the body from the outside into the vagina, and then place the clenched fist in the fundus of the uterus and push gently. The uterus will gradually return. Care must be taken not to push too suddenly or too vigorously, or the fist may rupture the uterus. When returned, pour in a bucketful of a warm solution of Eusol. The weight of this fluid will return the horns to their normal position.

A clamp (West's pattern) is applied to the vulva. The muzzle is removed and the cow propped up on her chest. By the time you are ready to leave she will be on her feet.

There is little after treatment required. The clamp may be removed in twenty-four to thirty-six hours. Occasionally an animal seems to hang fire for twelve hours or so. A bucketful of saline solution pumped in with a stomach pump soon puts this right, as it is often due to the stomach being full of food at the time of administering chloroform.

If the animal is standing, put on the chloroform muzzle first. As a rule the patient goes down quietly. Care must be taken that she does not go down on the uterus.

By this method a great deal of hard work is saved. The risk of rupture is practically nil if the patient is well under the chloroform.

I wish I had adopted this method twenty years ago. The reason of my starting this method was as follows :—

Some years ago a cow down with milk fever had at the same time everted the uterus. The latter was returned so easily that I decided to return the next one under an anæsthetic.

TRAUMATIC PERICARDITIS

By E. P. EDWARDS, M.R.C.V.S.,
Mold.

THE subject, a good cow in excellent condition, was first seen on June 4, 1922. A tentative diagnosis of "heart trouble" was made,

and this changed to a positive one of traumatic pericarditis on the 10th. All the classic symptoms were present: œdema of the brisket, rapid, wiry pulse, tumultuous heart action, with the "tinkling" and "churning" sounds of pericardial fluid.

Accustomed to early diagnosis of such cases, which are very frequent here, and if in good condition to advise slaughter, this course was followed; but a hitch occurred with the butcher, and the old lady owning the animal decided to let her cow die, as I confidently predicted she would.

The animal, however, refused to die, although the œdema at the dewlap developed enormously, and appeared also under the jaw, and the heart became almost inaudible from pericardial thickening.

About the middle of July she "picked" her calf, and by this time had become very emaciated, but still took some food, had normal motions of the bowel and ruminated, though the dropsical dewlap remained and a most rapid, wiry pulse.

The animal annoyed me. By all the rules of the game, played by me in many hundreds of cases during the last thirty years, she ought to be dead—but she wasn't, and, on the contrary, in August and September the son of the owner, whom I often met, gave glowing reports of her wonderful improvement in condition. The œdema had entirely disappeared, and by Christmas she was said to be fat.

Underneath my annoyance was an intense interest, and there was a sacred promise extracted that when she was disposed of (or died—my reservation !) I was to be at once informed.

On January 31, 1923, this promise was redeemed: the cow had been bought by a local butcher for £25, and was slaughtered on February 5th, and a post-mortem made, my pupil, the owner and the butcher being present.

She made an excellent body of beef, and though there were lesions in plenty, none were fatal to the carcase being passed for food, much to my relief, for I had qualms as to butting in for a p.m. should extensive damage be found or tuberculous disease present. Butchers are quick to take advantage of such coincidences.

No trace of œdema at the brisket, but there was a considerable œdema all along the back on each side. Very extensive adhesions of the rumen to the diaphragm, with thickening of the walls of this organ and of the reticulum. The abdominal contents were removed, and the posterior surface of the diaphragm examined; but although organised thickening was present, no patent opening could, as in many cases, be traced.

On opening the rumen at the side of the marked thickening, two pieces of wire were found, but both were lying free in the organ.

Satisfied that they could have no connection with the pericarditis, the chest was explored, and " the pluck " removed entire. Adhesions were present between the apex of the heart and the pleural walls on both sides, but it was very remarkable how little pericardial thickening there was, considering the gravity of the symptoms at the stage of the case in July, with the excessive œdema, the muffled, almost inaudible heart sounds, absence of sounds of fluid, rapid, wiry pulse, and most marked emaciation.

The indications of the actual position of entry of a foreign body pointed to the left side of the heart, and after removal of the lungs I was feeling and groping for a lead as to where the offender, which I felt confident was present, could be.

Presently I got my fingers into the left auricle, and, cutting down thereon, got into the ventricle, where I felt a free body, which I clutched and brought out.

It consisted of a brass safety-pin of large size, the pin of which was twisted around the flange, and its point protruding on the side of it in anything but "safety" position.

Still, such a body should, one would think, offer enormous resistance to progressive puncture of a solid organ. Yet it had got there, and, more wonderful still, must have been there for several months, and the animal had survived the ordeal of its passage and its presence, and got back to butcher's condition.

On the left side of the pericardial sac was an abscess containing about 4 ounces of creamy but stinking pus, and the sac at this point was more thickened and hardened than anywhere else, and was probably the point of entry. It has often been said that the heart is the most wonderful organ in the body, and this case is to me a striking example of the truth of the assertion.

CELOSOMIAN MONSTROSITY

By J. G. HOBAN, M.R.C.V.S.,
Whitchurch.

I was asked to attend a cow with uterine dropsy, close to calving, and found her an enormous size, though still able to move about and eating. An attempt was made to open the os, but failed, so the abdominal wall was punctured. The cow was seen again in a few days, but was just as huge. The owner wished her to " take her chance," so powders of mag. sulph. and pot. nit. were left to be given twice a day with ʒij doses of pot. iod. in between.

Some days later I was asked to calve her, as "she had flooded the place out, yet no calf was coming."

On vaginal examination I could feel a head, two fore and two hind limbs. Sure I had twins to deal with, I roped the fore legs and had traction applied whilst endeavouring to push back the hind limbs, but these kept coming as the head and fore part moved. I decided to let them come backwards somewhat, and then found I could trace the spinal column all the way, and that the trouble was an everted and eviscerated calf. Delivery was affected without much difficulty, and though the cow was a wreck for some weeks she quite recovered.

Craig (Fleming's *Obstetrics*, third edition) mentions (p. 127) that "imperfections in the function of heart or liver of fœtus may act in producing it" (dropsy), and again (p. 260) says "undue pressure" may cause monstrosities; but in this case there was a combination of the two, and one cannot say which was the primary condition. The animal was unduly swollen for the last three months, but the owner believed she carried twins, until some days before I first saw her—two weeks before calving, when she became huge.

ABSCESS IN THE HEART MUSCLE OF A BULL

By W. HUGHES, M.R.C.V.S.,
Caerwys, North Wales.

The patient, a pedigree Lincoln red bull, two years old, appeared perfectly healthy one morning, and was noticed early in the afternoon to be out of sorts. The cowman came at once for me, and was only away from the patient about an hour. When he returned he found the bull lying dead.

Post-mortem revealed an abscess about as large as a pullet's egg in the interventricular septum. It had bursted into the right ventricle.

LEAD-POISONING IN HORSES AND CATTLE

By W. HUGHES, M.R.C.V.S.,
Caerwys, North Wales.

Cases of lead-poisoning are very common in this district owing principally to the flood water passing through the tips on the surface of the mines on to the grass of the adjoining fields.

Another cause used to be from the fumes and smoke of the smelting

works settling on the surrounding pastures. This latter is now obviated to a very large extent by the application of condensers in the chimneys. The principal symptoms shown in the chronic cases are great emaciation, pallid mucous membranes, roaring, and partial paralysis, accompanied by a dry, harsh, staring coat, together with amaurosis and delirium in the acute cases.

Once badly affected, the roaring never disappears, and the animal becomes utterly useless and liable to suffocation on the slightest exertion. Tracheotomy gives temporary relief, but in the majority of cases the best advice to give to the owner is that the animals shall be destroyed.

At the present moment I have a very serious outbreak involving both cattle and horses on a farm which lies below some old lead workings. The owner lost five horses last year, and the outbreak is so serious that the tenant of the farm has given notice to leave, as it is impossible for him to graze his animals on the pastures.

I have tried the routine Potass. Iodid. and Mag. Sulph. treatment, but up to the present without any success. The only thing really to do is to send the animals away to another district which is free from contamination, and if they are not too far gone they may recover.

ON A TRYPANOSOME OCCURRING IN BRITISH SHEEP, AND ITS TRANSMISSION BY THE SHEEP-KED

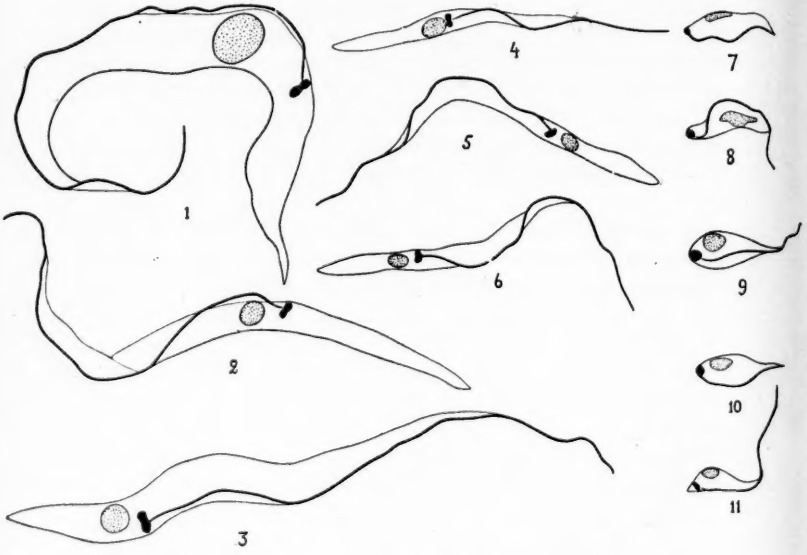
By CECIL A. HOARE, B.Sc.,

Research Worker for the Medical Research Council at the Wellcome Bureau of Scientific Research, London.

Attention was first drawn to trypanosomiasis of European domestic sheep by Dr. Woodcock's discovery of a single trypanosome in the blood of a sheep examined by him in 1910. Woodcock suggested that the trypanosome represented a developmental stage of *Crithidia melophagia*, a flagellate which is commonly found in the gut of the sheep-ked, *Melophagus ovinus*. The proof that there existed such a connection between the ked-flagellate and the sheep trypanosome was, however, lacking. Several other observers (Flu, 1908; Swingle, 1909, 1911; Porter, 1910) who have studied the ked-flagellate realised this possibility, and attempted to discover the trypanosome in the blood of sheep and to establish a relationship between it and the ked-flagellate, but with negative results. They concluded, therefore, that they were dealing with a specific insect-flagellate which had no vertebrate host. This question was again revived in 1919, when Nöller, working in Germany, succeeded in demonstrating the presence of trypanosomes in the sheep's blood by using cultural methods.

He did not, however, prove that this trypanosome was transmitted by the sheep-ked.

My own investigations were started in 1920. By using the cultural method (blood-bouillon medium) I was able to demonstrate the presence of trypanosomes in 80 per cent. of sheep examined by me in a flock



TRYPANOSOMA MELOPHAGUM. × 2·000.

Fig. 1. Trypanosome from sheep's blood.
Fig. 2. Trypanosome from primary sheep's blood-culture.
Fig. 3. Transitional form from primary blood-culture.
Fig. 4. Established (crithidial) form in culture obtained from sheep's blood.
Fig. 5. Crithidial form from mid-gut of the sheep-ked.
Fig. 6. Typical (crithidial) form from culture of flagellates of the ked's gut.
Figs. 7 and 8. Small trypanosomes in culture from sheep's blood.
Figs. 9 and 10. Small trypanosomes from hind-gut of the sheep's ked.
Figs. 11. Small trypanosome in culture of the flagellates of the ked's gut.

(From the *Trans. Roy. Soc. Trop. Med. & Hyg.*, vol. xvi, No. 3, 1922.)

in Hertfordshire. I also succeeded in proving conclusively that the trypanosome was transmitted by the sheep-ked.* The experiments were conducted on "clean" lambs bred under observation. One lamb, which had never harboured keds, and which had been repeatedly

* A preliminary note on this question was published in the *Transactions of the Royal Society of Tropical Medicine and Hygiene*, vol. xvi, No. 3, 1922, pp. 188-194.

proved to be free from trypanosomes, had about 300 keds placed on it, with the result that trypanosomes appeared in cultures taken from its blood a week later. The natural mode of transmission is "contaminative," the sheep either licking up the ked fæces which are deposited on the wool, or biting off the keds from its body and liberating the flagellates in its mouth. This was demonstrated by an experiment in which a "clean" lamb contracted an infection after having been fed on the abdomens of about 60 keds. With the same result the experiment has been repeated on several occasions. That the sheep cannot be infected through the bite of keds was proved by the observation that a lamb which was allowed to be bitten by keds on several days never became infected, as was also the case with a sheep which had the flagellates of the keds applied directly to scarification on the skin.

The sheep-trypanosome, which now bears the name *Trypanosoma melophagium*, after the name *Crithidia melophagia* given by Flu to the flagellate form in the ked, is a large species (47 m. long), with the kinetoplast at a considerable distance (9·6 m.) from the posterior end. Morphologically it is referable to the *T. theileri* group.

The trypanosomes in the blood of sheep are very scanty. Dozens of blood films from known infected sheep may be examined without a single trypanosome being found. The only reliable and certain method of detecting their presence is the cultural method, as is the case with cattle trypanosomes. I have kept the trypanosomes growing in cultures for 11 months. They assume a crithidial form in cultures, similar to that in the gut of the ked.

In the intermediate host, *Melophagus ovinus*, the trypanosome undergoes a cycle of development, passing from a crithidial stage in the mid-gut to a trypanosome stage in the hind-gut. The small trypanosomes lining the walls of the hind-gut represent the forms which give rise to infection when ingested by the sheep. The presence of these forms was overlooked by all previous authors, who studied the flagellates in the ked.

It must be recognised that, as practically 100 per cent. of the keds are infected with the flagellate, it would be expected that all sheep harbouring keds would be infected with the trypanosome, and the results I have so far obtained are in support of this view. No infection could be produced in laboratory animals.

The trypanosome does not seem to have any pathogenic effect upon the sheep, which shows no signs of discomfort, its temperature remaining within the normal limits and the general condition being unchanged.

It is, however, known to veterinary surgeons and breeders that

sheep may suffer considerably when infested with keds. Lambs are said to emaciate and even die as the result of heavy infestations. It is not improbable that to a certain extent this may be due to the presence of trypanosomes in their blood or organs. Although apparently harmless under normal conditions, it is possible that the trypanosomes may sometimes become pathogenic; as, for instance, in debilitated animals. If this conjecture prove correct, trypanosomiasis will have to be recognised as a new disease of domestic sheep, and more radical methods will have to be employed for the eradication of the keds, or more stringent regulations enforced, since the dipping methods as employed at present, at any rate by the majority of sheep owners, are inadequate for the purpose.

RHODODENDRON POISONING IN GOATS

By W. L. LITTLE, F.R.C.V.S.,
Reading.

Mr. Philip Vincent's article in the July number of this Journal tempts me to record the following:—

I was asked by a client to ascertain the cause of death of two goats.

The owner kept an old nanny and two young castrated billies which had the run of a lawn and were housed at night.

The old nanny and one billie were found dead in their house in the morning, no signs of illness having been noticed.

I suspected evergreen poisoning, and on searching the garden found nothing growing there which, if eaten, would have caused the death, but a few stalks and leaves of rhododendron were found lying about, and on inquiry found that children had the day previous been seen to throw portions of this plant to the goats.

Post-mortem examination showed a large quantity of the stalks and leaves of this plant in the rumen. It is interesting to note that the old nanny showed no more sense than her kid, and that one kid showed no symptoms at all—evidently having eaten very little if any of the plant.

It is not uncommon to find sheep poisoned with this plant.

A CASE OF RICKETS TREATED WITH VITAMINES

By Lieut.-Colonel T. DUNLOP YOUNG, O.B.E., F.R.C.V.S., D.V.S.M.,
London.

A litter of pedigree puppies, eight in number, all apparently in good health, and all reared by the same mother, received the same amount of exercise, fresh air, sunshine, and comfortable housing.

When four months old, one of the litter (a male) began to show symptoms of rickets. The disease developed rapidly, the ends of the long bones enlarged, the little animal could not raise itself on its hind legs, and the fore legs curved outwardly at the elbows, so that the puppy resembled a small bull-dog. All the other puppies were in a healthy condition.

It was resolved to try the effects of Vitamines, and " Metagen " (supplied by Messrs. Parke, Davis & Co.) was used; two capsules being given three times daily.

In order to observe whether any improvement was due to the " Metagen," no other treatment was adopted; the food, fresh air, sunshine, exercise, and housing of all the litter remained the same as before the treatment was begun.

After two months' treatment with " Metagen " this puppy could run nearly as fast as the others, could raise himself on his hind legs, and climb a short staircase; the ends of the long bones, and the fore legs, had returned almost to the normal. The treatment was stopped, and the improvement continued. At eight months old the dog was sold, and the new owner is very satisfied with his purchase.

The cause of rickets has been attributed to one or all of the following, viz.: Improper diet—e.g. improperly balanced food—lack of exercise, lack of sunshine, lack of fresh air, lack of lime salts, bad housings—e.g. damp, cold kennels—and improper feeding of the mother.

As all of the litter was fed and reared exactly on the same method, none of the above-mentioned causes could apply to the puppy without applying to the others.

I am unable to define the cause. Suffice to state that the case was one of rickets, and the treatment with " Metagen " was a success.

AN OUTBREAK OF DEMODECTIC MANGE IN CATTLE

By D. S. RABAGLIATI, O.B.E., B.Sc., M.R.C.V.S.

Major, late R.A.V.C.; Director, Serum Institute, Ministry of Agriculture, Egypt; Lecturer on Veterinary Medicine and Contagious Diseases, School of Veterinary Medicine, Cairo.

THE published records of actual outbreaks of demodectic mange in the ox being few, the writer hopes that the following description of one which occurred amongst bulls kept for the production of anti-cattle plague serum may be of interest. The affected herd, which consisted of Egyptian bulls, together with a few Cyprus steers, is kept at Abbassieh, near Cairo, on a desert hill. All the cattle are kept tied up in wooden mat-covered sheds on the sand, no bedding being used.

They are groomed regularly, kept under the best sanitary and hygienic conditions, and are all in first-class condition.

History of the Outbreak.—The ground at the Serum Institute had been used for cattle for many years before the Great War, and to the writer's personal knowledge no case of the disease had been diagnosed there previously. During the war it was used first as a horse remount depot, and later as a quarantine camp for native personnel. In June 1919 the Institute was reopened for serum work and a number of new bulls were bought. One of the first purchased animals, No. 6, was admitted on June 22nd, and about the middle of August was found to be suffering from a nodular skin eruption. Apparently no microscopic examination was made, but the bull was isolated, clipped and dressed with a sulphur and oil dressing. The animal recovered to some extent so that it was returned to its usual stable about a month later. In October of the same year the eruption was again noticed, and a pustular condition found to be present all over the back and sides. A caseous pus was obtained from some of the nodules, and on examination by Mohamed Bey Asker, then Pathologist of the Institute, the case was diagnosed as one of demodectic mange, large numbers of the parasite, *Demodex folliculorum*, var. *bovis*, being found in every pustule examined. This appears to be the first case of the disease in cattle ever reported in Egypt, but Asker Bey did not publish the fact. The bull was again isolated, re-clipped and dressed with sulphur and oil on several occasions. Considerable improvement took place, but the animal was not completely cured, as further pustules occurred from time to time.

As many authorities have cast doubt on the contagious nature of this disease in the ox, the bull was finally returned to its usual stable early in December 1919. Here it remained with numerous pustules on the skin until November 6, 1921, a period of twenty-three months. It was bled for serum and treated like any of the other cattle in the Institute. On this date it was bled to death for serum as the number of cattle was being reduced, being chosen more from the fact that it had reacted to the tuberculin test than because it was the subject of this mange. Although there were a varying number of between 110 and 170 serum-producing cattle at the Institute during this period, and all were examined at frequent intervals, no further case was diagnosed up to this date.

However, on April 22, 1922, four and a half months after this bull, No. 6, had been killed, another bull in a stable far removed from where the original case had been was detected with the disease, and a day later a further case, still in another shed, was found. These were isolated and treated, and weekly inspections of all cattle carried out. This

was done by running the hand over the surface of the body in every case. It was not until the beginning of June that further cases occurred, though during the first fortnight of that month six more were diagnosed.

A month later three more affected bulls were isolated, and it was feared that the disease might become general. Some of the cases already found had only a few pustules which were often difficult to detect, and it was thought that many more cattle might have pustules which were still unobserved. For this reason every bull was cast and examined by one of the Veterinary Staff of the Institute, who carefully ran his hand over the neck, back and upper part of the legs to ascertain if any pustules were present. Greater accuracy in diagnosis could be obtained with the animal in the cast position than while standing. As a result of this minute inspection it was found that out of 110 bulls then on the strength, no less than 53, or 48 per cent., were affected, but many so slightly as only to have two or three pustules present, which were sometimes found only with the greatest difficulty.

Symptoms.—The following is a general description of the symptoms seen. At the outset it may be stated that there was no loss of condition whatever, and the affected cattle seemed in no way inconvenienced. There was no pruritis noticed, and except in the case of one bull there was no general thickening of the skin over the affected areas. In this case a patch about the size of a man's hand was somewhat denuded of hair and the skin became thickened and scaly, but even then there was no evidence of itching. In most cases the only sign of the disease was the presence of the nodules. These varied in size from a millet seed to that of a good-sized pea at most. Van Saceghem (1) states that nodules may occur as large as a hen's egg, but in this outbreak such was not the case. When of medium size the nodules could be seen in a good light, the conical nodule with its covering hair showing up well, but when small they could only be felt, and even then in some instances with difficulty. The larger ones were sometimes open at the top, and a caseous pus, yellowish in colour, could be squeezed out; but in the case of the smaller nodules it was necessary to open them with a scalpel before the pus could be expelled. This pus was rich in the causal parasites; in fact, no case was accepted as being mange without finding the parasites on microscopic examination. From only two or three nodules to as many as a hundred or more might be found on one animal. This agrees with the description given by Bugge (2). Mitter (3) states that the formation of nodules was preceded by a rise of temperature of the affected ox for two or three days, and that each nodule was surrounded by an inflamed area of skin and a hæmorrhagic ring in the first instance. Neither of these condi-

tions was ever noticed. The commonest sites of infection were on the base of the neck, shoulders, axillæ, forearms, sides of the body and flank, but pustules were occasionally found in other situations. None were ever noticed on the head, and only in one case below the knees or hocks. The condition was very chronic, and frequently new crops of pustules appeared from time to time. If left alone, they usually remained for long periods, with but little alteration, and showed but slight tendency to burst. It has been stated that the disease is rare in both very young and very old animals. As all the serum bulls were between about four and eight years of age, this point could not be determined. It is worthy of note that no case was detected in a Cyprus animal, but this is probably more due to the fact that all these cattle were housed in a separate stable which may have escaped infection rather than to any special immunity of such animals.

Treatment.—The first diagnosed cases were all isolated, but later on only those most seriously affected, amounting to fifteen in all. When it was seen that the disease had become general, further isolation was considered unnecessary. There was no danger of spreading the disease outside the Institute, as this itself was well isolated, and no cattle ever left it.

The treatment carried out for those cattle severely affected was as follows: They were all clipped by shears so shortly that it really amounted to shaving them. Next they were cast and all pustules were opened with a scalpel, the pus squeezed out, and petrol injected into the nodule, and in some cases the seat was painted with tincture of iodine. This was repeated once a fortnight, for it was found that although the old pustules rarely reappeared, new crops were apt to occur. The sulphur and oil dressing was found to be worse than useless, and so was given up—at least this was the experience in the case of those cattle which were severely affected. In three cases the subcutaneous injection of arrhenal * was tried, 2 grammes in 50 cubic centimetres of water being given daily for a fortnight. In one case improvement occurred, but in the others it did not seem to have the desired effect. Finally the cattle were sprayed weekly and then fortnightly with Cooper's Cattle Dip (1–150). This was continued until the case showed improvement.

In the case of those more slightly affected, the following was adopted:—

1. All iron curry-combs were withdrawn from the sites, as it was feared that they might spread the disease from one part of the body to another, if not from bull to bull.

2. Disinfection of dandy-brushes. Rugs were not in use at the time of the outbreak, as it was summer.

* Arrhenal (Disodium methyl-arsenate, $AsCh_3O_2Na_2 + 6H_2O$)).

3. All cattle, clean and infected, were clipped as in the case of the severely affected ones.

4. Weekly sprayings with Cooper's Dip (1–150) of all cattle, clean and infected, for four weeks, and then fortnightly for six weeks.

5. At the end of this time the cattle appeared to be improving, and the spraying was done twice more, but at longer intervals.

Results.—One of the badly affected bulls was slaughtered after three months' treatment as it showed no improvement at all, in fact the disease continued to spread. By the spring of 1923 the disease could no longer be found, and it was thought that all the remaining infected cattle had recovered. Of the other badly affected animals, six more were disposed of in the interval between the outbreak and the time of writing, for reasons not connected with the trouble in question, but eight are thought to have recovered.

Remarks.—Whether there were really no cases except the first one described before April 1922 one cannot be absolutely certain, for the minute examination carried out later on to detect the cases was not done in the first instance. It can be safely said, however, that there were no bad ones. With further experience it was seen how great are the difficulties in finding slight cases unless the very greatest care is taken. This brings up the question as to whether or not this type of mange is not more common than is generally supposed. Hurst (4) quotes a statement that the demodex in man is practically universal, which is certainly not the popular belief; so it may be asked, Is this also true in the case of the ox?

The disease has been recorded in the Belgian Congo by Van Saceghem, in India by Mitter and others, in Nyasaland by Griffiths (5), in Rhodesia by Armfield (6), and a case has recently been mentioned as occurring in a buffalo in Madras by Parameswaran (7).

No attempt has been made to describe the morphology of the parasite in this note, but it appears to be identical to that of the ox already frequently described, *Demodex folliculorum*, var. *bovis* (Stiles).

One is forced to the conclusion that the condition is more common than generally believed to be, and that its contagious nature varies in different circumstances. Ample evidence, however, exists to prove that it is contagious in many cases.

NOTE.—Since writing the above description, several of the cattle of the Institute have again been minutely examined, and unfortunately some further cases have now been detected (July 1923). In many of the previously affected bulls no signs of the disease can be found, but one or two of the former cases are again showing pustules containing living parasites. The disease has also been diagnosed in some bulls

only admitted to the Institute in February of this year, when it was thought that the disease had been stamped out. Though the infection in these animals is very slight, one must conclude that they have become infected since purchase, thus showing the great difficulty of eliminating such a condition from infected premises.

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Abstracts of Current Literature

Dardillat, R.—Case of Colic due to Torsion, and the Reduction of the Twist.—*Recueil de Médecine Vétérinaire.* (Tome 98, No. 19.)

THE author was called to a case of colic in a three-year-old mare. The mare had been driven 30 kilometres the previous day and showed dull colic in the morning. Palpitation showed no special sensibility of the abdomen; the animal tried to lie down and roll; injection of pilocarpine produced abunptyalism but no defecation—only wind; the abdomen was slightly distended. Rectal exploration revealed an empty bowel; about 40 centimetres in at the level of the pubic extremity the hand was stopped, the floating colon took a sharp bend downwards and some impacted dung at the twist was removed. All efforts to untwist the floating colon were in vain and the expulsive efforts of the mare served to hinder reposition of the viscera; probably twist of the colon was present. A stiff dose of opium was given and half an hour afterwards further rectal manipulation was undertaken: under pressure a gliding movement was noticed and quickly the colon righted itself, and the hand penetrated into a normally mobile bowel. Colic ceased immediately, and two days afterwards the mare was put to work. Here it seemed as if a twist of the colon had surrounded the floating colon, but whatever the condition the author stresses the importance of rectal exploration in cases of colic.

Taskin, M.—Radiology and Two Cases of Foreign Bodies in the Digestive Canal of the Dog.—*Recueil de Médecine Vétérinaire.* (Tome 98, No. 19.)

THE author reports two instances of diagnoses by radiography of foreign bodies and their nature in the dog. In the first case a mutton bone about 5 centimetres long was seen in the intra-thoracic precordial portion of the œsophagus. Medicinal paraffin was given and a few minutes afterwards 5 milligrammes of apomorphine, the object being to provoke vomiting with a view to driving the bone towards the cervical portion of the œsophagus, so that it might be removed surgically. The dog died, however. M. Taskin considers that if the dog, which had been ill from September 13th to 17th, had been brought to him on the 13th, and had radiology applied, there would have been a good chance of recovery. The second case refers to a dog which radiology showed to have a stone the size of a filbert nut and seven carpet nails in the left *cul-de-sac* of the stomach, and the right *cul-de-sac* contained two nails. Five milligrammes of apomorphine were given subcutaneously and the subject vomited at the emission seven nails and the pebble. On a second radioscopy the two nails in the right *cul-de-sac* were found to have entered the duodenum. Intervention had not been prompt enough. The patient, however, recovered his normal appetite and liveliness, and the two remaining nails were eventually passed in the stools. The author stresses the advisability of radiological diagnosis, and to avoid errors reminds those who send or bring patients to a radiologist that veterinary surgeons are the best men to conduct this operation, as they are familiar with the anatomy of the dog (medical men are often totally or partially ignorant of canine anatomy), and further, the examination cannot be made by one's self, with an installation lent. The author's plea is really for an expert veterinary radiologist.

Detre.—Measures Against Hog Cholera in the United States.—*Deutsche Tierärztliche Wochenschrift,* No. 4, 1922.

IN the year 1913 the number of pigs in the United States was 61·2 millions; in 1920, 72·9 millions. The losses from hog cholera in 1913, after the introduction of inoculation, were 6·1 millions, and in 1920 they were 3·4 millions. Therefore the figure of losses in about a 20 per cent. larger total declined to about one-half or 56 per cent.

The centre of the whole of the measures against hog cholera is the Washington Bureau of Animal Industry, which controls and supports fifteen district experimental farms, and from the Central

Bureau, of which administrative, explanatory and hygienic instructions emanate.

The necessary virus and serum are obtained from the district officers, and there are three chief sections of the Bureau dealing with hog cholera.

The *Biochemic Section*, which is at the heart of things, is under the direction of Dorset, who has many important discoveries to his credit in connection with the virus, the serum and the simultaneous method of inoculation. Of the numerous scientific works which originate from this Institute, those on the method of transmission of the disease are interesting. These comprise the part played by the hog-louse, as well as flies and species of gnats as transmitters of the malady, and the virus of the disease has been shown to persist in the bodies of house-flies. Co-ordinated with this department is the *Hog Cholera Section*, which carries out the regulations against the disease in conjunction with the authorities of the different States. In 1920 there were 140 veterinary surgeons employed in confirming outbreaks notified by the owners, in quarantining and other operations, in disinfecting and as itinerant lecturers. Not the least important is *the third section*, the *Serum Control Station*, which tests the serum made by the immense hog cholera serum industry. This section gives concessions to the serum manufacturers, controls the methods of work, the hygiene, the production proportions, as well as checking the testings. There is a special serum law to ensure that only good serum is used. Most manufacturers still use defibrinated blood for serum, but in recent times a few institutes produce pure serum by centrifugalisation. The following figures are interesting: In 1920 there were under control in the serum factories 446,800 pigs and 5,400 calves (the latter used to ensure that any serum and virus sent out did not harbour the virus of foot-and-mouth disease). The amount of material produced was 525,043 litres of serum, 22,838 litres of simultaneous virus, and 114,180 litres of virus blood for serum production.

In dealing with the hog cholera in America, two methods are in vogue. The one, the *pure serum inoculation*, which, by means of the anti-bodies present in the vaccine, confers immunity from three to four weeks. It has a curative effect if used early in the illness. The other method is *the simultaneous one*, which consists in the injection at one and the same time of amounts of serum in proportion to the body weight and ½ to 2 centimetres of virus. According to Dorset this simultaneous inoculation confers lifelong immunity in almost 100 per cent. of cases, and he advises it under certain defined conditions even when the pigs have the disease.—G. M.

XUM

Leblois, M.—Enormous Calcified Chondroma of the Humerus in the Cat.—*Recueil de Médecine Vétérinaire,* March 30, 1923.

A BLACK cat, five years old, had attracted the attention of its owner by the position it took up when at rest: it always chose a chair, placed itself on the edge, and let its anterior left leg hang vertically. It soon showed a progressively increasing claudication not accompanied by pain. The member was held in abduction by a lump larger than a hen's egg situated in the brachial region; a tumour was certainly the cause, but it was impossible to say exactly what tissue was involved; its relative suppleness and anterior

situation, and an injury at the same level by a penetrating piece of wood, suggested the possible existence of a mycetoma (seen also in trench foot—G. M.). It was this that caused us to keep the subject and proceed to study the lesion with the willing and elucidating help of Professor Petit.

Dissection showed absolutely intact muscular tissue playing on an unrecognisable humerus, as large as a peach, globular, with a surface like a cauliflower, and very easily cut by a scalpel. The articulations and the axillary ganglion were intact.

It was undoubtedly a calcified chondroma, but curious from its size, situation, and intensity of its deforming action, so much so that we deemed it worth recording.

Lassabe, M.—Torn Off Horns in Cattle.—*Recueil de Médecine Vétérinaire*, March 15, 1923.

L. RECOMMENDS a solution of picric acid in these cases in working oxen. Its antiseptic, keratinising and hardening action enables the subject to be quickly used again. He has had animals working again in twenty-five days after the accident, and considers that the point is interesting from a utilitarian point of view. Some padding is put on the yoke straps at the place where they come round the horns.

Lassabe, M.—Obstruction of the Œsophagus and Indigestion and Inappetence in the Pig.—*Recueil de Médecine Vétérinaire*, March 15, 1923.

MEDICINE is difficult to administer in the pig, and force is never advisable if accidents are to be avoided. The use of apomorphine in doses of 2 to 5 and up to 8 centigrams will produce intense vomiting, and bring about the result required in two-thirds of the cases. In obstruction of the œsophagus by potatoes it is the method of choice. In cases of indigestion and suspected poisoning it is also very useful.

Berge, E. Dr.—Parasitic Otitis in Dog and Cat.—*Berliner Tierärztliche Wochenschrift*, June 7, 1923.

DR. BERGE has been conducting close investigations in this matter at the clinic for small animals at the Dresden Veterinary School. He finds that otitis externa parasitaria is due to dermatophagus mites which can pass from one animal to the other. The affection is comparatively frequent.

The complaint in dogs results chiefly through cats. The parasites cause no pathologic anatomical changes in the ear. They only produce a strong secretion of wax, which sets up inflammation through decomposing. The clinical signs in dogs consist in intense itching, shown by the patient constantly shaking and scratching the ears, which often brings about injury to the parts.

The same symptoms were noticed in part of the cats; but in other cases numerous mites were present without any subjective indication signs. Individual susceptibility in cats was very varied. Therapy consisted in 3 per cent. creolin oil. In comparison with zooparasitic otitis, mycotic otitis was very rare.

Brown, W. H., M.D., and Pearce, Louise, M.D.—Studies Based on a Malignant Tumour of the Rabbit.—*The Journal of Experimental Medicine*, May 1, 1923.

MALIGNANT tumours are said to develop frequently at the site of old syphilitic lesions. Until recently no experimental investigation in this connection has been possible, due to the lack of an animal in which both conditions could be studied experimentally. The authors, however, have observed a highly malignant tumour in a rabbit infected with syphilis, and the tumour has been successfully transplanted to other rabbits, been in existence two years, and is now in its twentieth generation. Many benign tumours have been reported in rabbits, but malignant growths appear to be extremely rare.

The rabbit was inoculated in both scrota with the strain of *Treponema pallidum*, a syphilitic lesion developed, followed after four years by a malignant tumour, which eventually caused the death of the rabbit. The transplantation of the growth was accomplished by intra-testicular inoculation to other rabbits, and it was successfully propagated for a period of two years. The neoplasm was of epithelial origin, and composed of cells allied to those found in the bulb and root sheath of the hair. A study of the transplanted tumour in the first and second generations showed that it possessed a high degree of malignancy. The article is illustrated by ten full-page plates.

Taskin, M.—Method of Destroying Dogs by the Intracardiac Injection of Chloroform.—*Recueil de Médecine Vétérinaire*, October 1921.

ACCORDING to the author, the technique of this procedure, already used in various laboratories, is superior to those hitherto employed. It consists in injecting a small quantity of chloroform into the heart (17 to 34 minims). The cardiac zone is localised by palpation or auscultation; a long fine needle (6 to 10 centimetres long for a dog of average size) is used, passed between two ribs, and when a drop of blood appears in the syringe the injection is pushed in quickly. Respiratory syncope takes place first; then cardiac systoles weaken very quickly, and definitely cease at the end of a few seconds.

Valv, M.—Practical Results Obtained by Use of Trypanblue in Piroplasmosis.—*Revue Vétérinaire*, January 1923.

CURE seems so much the more certain, and convalescence less long according as treatment is commenced soon after the outbreak of disease.

Nuttall and Hadwen, out of ten sick dogs, lost three; two were in very bad condition and one was *in extremis*; five cattle treated, which showed hæmoglobinuria, were cured, and out of four controls one died. In the experiences of Stockman four controls without hæmoglobinuria were not treated and recovered, and seventeen treated out of forty that showed hæmoglobinuria all recovered.

In the Transvaal, out of twelve English cattle imported and treated eleven were cured, and the twelfth only died through delay in treatment (*Theiler*).

Evers relates the cure of fifteen animals affected with hæmoglobinuria by the injection of a solution of 1 per cent. trypanblue.

On the advice of Moussu some veterinarians in France and Algiers have treated cattle affected with piroplasmosis by intravenous injections of trypanblue. The data gathered show that a first injection of 1 to 1·5 grammes of trypanblue to adult animals of average size is indicated. Mellis in Algiers cured nineteen sick animals affected in different degree. The four unsuccessful cases were observed in sick animals treated by the subcutaneous method. The observations of Fraimbault in Morocco confirm those made in Algeria by other authors. Trypanblue acts in a favourable way on the evolution of bovine piroplasmosis and lowers the mortality.

On the advice of Yakimoff, Bielitzer used trypanblue in equine piroplasmosis. Two horses experimentally inoculated have recovered, the one four injections, the other five of 100 c.c. of a solution of 1 per cent. They were not infected, whereas a control succumbed to the grave form of the malady. In one locality where a grave form of the malady broke out in cattle (mortality 80 per cent., death occurring in twenty-four to forty-eight hours after appearance of hæmoglobinuria) trypanblue has completely modified the situation, and out of a great number of animals treated Bergschicker only recorded one loss seven hours after injection. Sergent, Lheritier and Ismert observed a case of piroplasmosis, which was rapidly cured after injection of trypanblue; the action on the parasites appeared manifest. Quevedo considers that trypanblue is assuredly effective against the cause of *tristessa*.

We could multiply these examples much more, which show, as Descazeaux has decided, that trypanblue, very efficacious in experimental piroplasmosis, does not always cure natural piroplasmosis.

The Veterinary Doctorate (*Revue Vétérinaire*, March 1923).—The project for the creation of a Veterinary Doctorate has been variously received in the different French journals. Some look on it with favour, some with friendliness, and some with irony.

The views of some noted Frenchmen on the matter are interesting. Dr. J. Noir, in *Concours Médical*, writes that in the course of his life as a practitioner he has had occasion to know veterinarians to chat with them, and has been able to judge them and esteem them for their value, and he asks frankly: "Why not a Veterinary Doctorate?"

The degree of doctor is actually a university title which indicates that its holder has incorporated a certain amount of scientific knowledge. Why should the profession of medicine be solely associated with the synonym of doctor? Why should doctors of human beings be jealous of doctors of animals? Of all professional men in the service of hygiene and sanitary science, veterinarians are the least indicted to the illegal practice of human medicine.

Besides the veterinary schools at Lyons, Alfort and Toulouse are veritable scientific centres where real savants are formed. The Academy of Medicine has a division of veterinary medicine, and the Academy of Sciences has more than once opened the doors of the Institute of France to veterinarians who were illustrious, learned men. Comparative anatomy, physiology and pathology become more important every day. The triumph of experimental medicine is no longer discussable. Without experiences made on animals, the human doctor stays in one spot and shuts out from his ken the wider routes of progress.

Comparative studies of medical science at Alfort, Lyons or Toulouse will be very useful. The doctor should not conclude too hastily from experiments on rabbits and guinea-pigs to the human being.

Since we find the veterinary studies full of interest, why should we think it strange to grant them the title of doctor?

General Marjoulet has been writing for some time in *Salut Public* of Lyons on the question of the Veterinary Doctorate.

He considers that veterinarians are creators of the science of zootechny, advisers to rural districts on animal production and on the maintenance of the health of flocks and herds, and are veritable missionaries of agricultural produce. The colonial veterinarians perform also a magnificent work. The public powers have created the diplomas of Doctor in Pharmacy and Agricultural Engineering, and why not the Veterinary Doctorate, with such renowned past men in the ranks as Bouley, Nocard, Colin, Thomas, Laulanié, Chauveau, Arloing.

Professor Roger Dean, of the Faculty of Medicine, Paris, in a toast at the banquet of the Society of Comparative Pathology, referred to the subject. He said he had asked a number of his colleagues: "What do you think of the diploma of doctor in veterinary science?" Some replied: "Frightful, it is dreadful; you are going to create among veterinarians two classes of practitioners; you are going to begin again what formerly existed in medicine, where they had doctors and officers of health."

Others replied that nothing better could be done. "Veterinarians are the great workers of comparative pathology, and comparative pathology is one of the most important branches of medicine; it is therefore only right to recognise the services rendered by veterinarians and to permit them the acquisition of a high University degree."

The Professor, who is evidently a knowing man, concludes by saying: "The Government has happily found an elegant solution of the question which gives satisfaction to everybody: it has created the title and referred the application to a Commission. Thus it will be that for years to come the diploma will exist in principle, but it will not be granted. (Laughter and cheers.)

The editor of *Revue Vétérinaire* hopes the eminent Dean's prophecy will not be fulfilled, and he cannot believe that an anonymous opinion will be given by the Commission, or that it will show indifference when called on to give its advice.

Review

The Journal of Experimental Medicine. Edited by SIMON FLEXNER, M.D., and PEYTON ROUS, M.D., No. 2, February, 1923, and No. 5, May, 1923, published monthly by the Rockfeller Institute for Medical Research at Mount Royal and Guilford Aves, Baltimore, MD. Per year 5 dollars; single copies 75 cents.

This is one of the periodicals issued by an Institute founded by one of America's rich men, who recognised his debt to mankind and employed his spare wealth in perhaps the best way possible. Two medical men, Rivers and Bayne Jones, have isolated influenza-like bacilli from cats, and the fact that such bacilli do exist should be fully recognised by workers who attempt to reproduce diseases in animals with *Bacillus influenzæ* and *Bacillus pertussis*. It is gratifying to note that one veterinary surgeon at least has found a sphere of activity in the work of the Institute. Mr. Ralph B. Little, V.M.D., with colleagues Theobald Smith, M.D., and Marion Orcutt, discusses the Source of Agglutinins in the Milk of Cows and the Absorption of Agglutinins in Homologous Serum fed to Calves.

For several years the milk of cows has been investigated with special relation to the udder as a locus of multiplication of *Bacillus abortus* and

the bearing of this condition on infection of the placenta during gestation. The experiments that were made showed that there was a distinct participation of the udder in the production of agglutinins when the gland is invaded by living or flooded by dead bacteria. The quarter injected reacts at first with a heavy influx of polynuclear cucocytes and later with an increase of agglutinins. The intimate physical association between the udder and blood was clearly indicated, and the facts noted showed that there is an active inward absorptive current in the udder, probably alternating with active secretion. In a rather interesting note by G. O. Brown, M.D., on " Exercise as a Bone Marrow Stimulus," we find one of the theories regarding rickets clearly supported by scientific research. The tests showed that exercise is essential in maintaining *active* bone marrow. There was distinctly more red marrow in exercised dogs than in the controls.

In the investigations on serum fed to calves it was found that the administration of cow serum by feeding may replace colostrum, and when the udder of the dam is diseased or suspected of carrying dangerous infectious agents such as tubercle bacilli and the calf worth raising, cow serum may be fed in place of colostrum.

Personal

THE commencement of a Veterinary Service has been made in the Irish Free State Army by the appointment of Mr. P. M. Quille, M.R.C.V.S., as Veterinary Officer.

Mr. Quille, who qualified from the Dublin College last year, holds the rank of Lieutenant.

AMONGST those who have been admitted to the honour of Freemen of the City of London during the past year, we notice the names of two members of the veterinary profession—Major Percy Dayer-Smith, O.B.E., T.D., M.R.C.V.S., and Professor F. T. G. Hobday, C.M.G., F.R.C.V.S., F.R.S.E.

W. GARDNER, M.R.C.V.S., Woodside, Maybole, acted as judge of the Roadsters, Driving Classes and Jumping at the Eighty-seventh Annual Show of the Stranraer and Rhins of Galloway Agricultural Society held at Stranraer last week.

AT a meeting of the Governors of the Royal Veterinary College held of July 17th, the resignation of Major A. B. Mattinson, O.B.E., M.C., F.R.C.V.S., D.V.S.M.(Vict.), of the Chair of Materia Medica, was accepted with regret, and Mr. E. G. Langford, M.R.C.V.S., who has acted as Resident Hospital Surgeon during the past year, was appointed as his successor.

At the same meeting Mr. A. Sams, M.R.C.V.S., who passed the Final Examination of the Royal College of Veterinary Surgeons on July 13th, was appointed Resident Hospital Surgeon for the ensuing year.

ROYAL VETERINARY COLLEGE

Annual General Meeting.

His Royal Highness the Duke of Connaught, as President of the College, presided at the meeting held in the Board Room of the College on Tuesday, July 17th. Lord Northbrook, in presenting the Report of the Governors, expressed regret that, notwithstanding the strictest economy, the expenditure during the year had exceeded the income by £218. In every other respect the year had been a satisfactory one.

His Royal Highness the Duke of Connaught referred to the lack of support which the College had received since its foundation more than a century ago, and stated that nearly every other civilised country had long ago recognised the great national importance of Veterinary Science. He was glad to be able to announce that, in conformity with the recommendation recently made by the Advisory Committee on Research in Animal Diseases, the Development Commission, through the Ministry of Agriculture, had made a grant of £25,000 for the erection of a new Research Institute in connection with the College. It was hoped that the new premises would be ready for occupation in less than a year, and he felt sure that this would mark a very important step in the progress of Veterinary Research in Great Britain. He would always continue to take a keen interest in the work of the College, which was of great importance from a national point of view.

NOTICES

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